Example 6. Two unknown charges have a force between them of 5.6 N. How will that force change if:
a) one of the charges is tripled?
b) one charge is halved and the other quadrupled?
c) the distance between them halved?
d) both charges are doubled and the distance tripled?

a) $F \propto Q$

$\therefore$ new $F = 5.6 \times 3 =$ **16.8 N**

b) $F \propto Q$ and $F \propto q$

$\therefore$ new $F = 5.6 \times \frac{1}{2} \times 4 =$ **11.2 N**

c) $F \propto \frac{1}{r^2}$

$\therefore$ new $F = 5.6 \times \frac{1}{.5^2} =$ **22.4 N**

d) new $F = 5.6 \times 2 \times 2 \times \frac{1}{3^2}$

$=$ **2.49 N**